PERSONAL EXPENSE TRACKER

PROJECT REPORT

PHASE II

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In partial fulfillment for the award of the degree

Of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

MUTHAYAMMAL ENGINEERING COLLEGE (AUTONOMOUS)

RASIPURAM - 637 408

ANNA UNIVERSITY :: CHENNAI- 600 025

JUNE 2023

ABSTRACT

The web application "Personal Expense Tracker" is developed to manage the daily expenses in a more efficient and manageable way. This project aims to create an easy, faster and smooth tracking system between the expense and the income. This project also offers some opportunities that will help the user to sustain all financial activities like digital automated diary. So, for the better expense tracking system, we developed our project that will help the users a lot. Most of the people cannot track their expense and income one way they face in money crisis, in this case daily expense tracker can help the people to tracking income-expense day to day and making life tension free. Money is the most valuable portion of our daily life and without money we will not last one day in the earth. So uses the daily expense tracker application is important to load happy family. Daily expense tracker helps the user to eliminate messy sticky notes, spreadsheets confusion and data handling inconsistency problems while offering the best overview of your expenses.

Keywords: INCOME, EXPENSE, SAVINGS, ALERT MESSAGE.

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INTRODUCTION

1.1 OVERVIEW

In simple words, personal finance entails all the financial decisions and activities that a Finance app makes your life easier by helping you to manage your finances efficiently. A personal finance app will not only help you with budgeting and accounting but also give you helpful insights about money management. Personal finance applications will ask users to add their expenses and based on their expenses wallet balance will be updated which will be visible to the user. Also, users can get an analysis of their expenditure in graphical forms. They have an option to set a limit for the amount to be used for that particular month if the limit is exceeded the user will be notified with an email alert.

1.2 PURPOSE

When you track your spending, you know where your money goes and you can ensure that your money is used wisely. Tracking your expenditures also allows you to understand why you're in debt and how you got there. This will then help you design a befitting strategy of getting out of debt. Budgeting ensures you're not spending more than you're making, allowing you to plan for short- and long-term expenses. It's an easy, helpful way for people with all types of income and expenses to keep their finances in order.

LITERATURE SURVEY

2.1 EXISTING PROBLEM

In a study conducted by Forrester in 2016 surveying small and medium businesses (SMBs)across the world, 56% companies reported expense management as being the biggest challenge for their finance departments.

In another survey conducted by Level Research in 2018 in North America, respondents reported the following pain points in expense management before adopting automation:

- Manual entry and routing of expense reports (62%)
- Lack of visibility into spend data (42%)
- Inability to enforce travel policies (29%)
- Lost expense reports (24%)
- Lengthy expense approval system and reimbursement cycles (23%)

2.2 REFERENCES

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2.3 PROBLEM STATEMENT DEFINITION

It is tough to keep track of all the financial decisions and activities that a person makes. Traditional expense tracking methods are inconvenient and unreliable. In order to get a quick overview about your total incomes and expenses and control spending, it's convenient to digitize the process by having a personal expense tracker

Who does the problem affect?	Working individuals, students and budget conscious consumers.
What are the boundaries of the problem?	Limited features to provide for expense tracking.
What is the issue?	To be vigilant about the expense spent increases financial stress. Being indecisive about the finances may result in less financial security and exceed the budget.
When does this issue occur?	When people are not able to track their expenses properly.
Where is the issue occurring?	In daily life of employees as well as students.
Why is it important that we fix the problem?	Fixing this issue will help users to better plan their budget and lead to financial well-being.

Sophie, who is a homemaker, finds it hard to control her desire to shop. To stop herself from overindulging in impulsive purchases, she needs to track her expenses and hold herself accountable.

Sam is a high school student who usually gets a limited allowance from his parents. Tracking his expenses and good budgeting technique allows him to spend on his regular expenses as well as on himself.

IDEATION & PROPOSED SOLUTION

3.1 EMPATHY MAP CANVAS

An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behaviours and attitudes.

It is a useful tool to helps teams better understand their users. Creating an effective solution requires understanding the true problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective along with his or her goals

Empathy Map for Personal Expense Tracker Application :

3.2 IDEATION & BRAINSTROMING:

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions.

3.3 PROPOSED SOLUTION:

Proposed Solution means the technical solution to be provided by the Implementation agency in response to the requirements and the objectives of the Project.

The main goal of presenting a business proposal is to provide solution to a problem faced by a potential buyer. This section should be as comprehensive as possible, and able to address all the needs that you have pointed in the first section.

S No	Parameter	Description
1.	Problem Statement(Problem to be solved)	Personal expense tracker applications will ask users to add their expenses and based on their expenses wallet balance will be updated. User will be notified if they exceeded their limit which is set by them.
2.	Idea / solution description	User can compare the month wise expenses in graphical representation by the chart format which they want. User have to set their monthly budget.
3.	Novelty/ Uniqueness	The photocopy of the cash receipt and screenshots of online transaction can be stored.
4.	Social Impact/Customer Satisfaction	To satisfy the user there is an option available to keep some expenses as secret record.
5.	Business Model(Revenue Model)	The personal expense tracker will allow the user to compare the month wise expenses and view that in a graphical representation for use the money efficiency, which will be accepted by people.
6.	Scalability of the Solution	The individuals will get the seamless service by login their profile anywhere and at any device with highly secure provisions.

3.4 PROPOSED SOLUTION FIT:

Problem-Solution Fit simply means that you have found a problem with your customer and that the solution you have realized for it actually solves the customer's problem.The Problem-Solution Fit is an important step towards the Product-Market Fit, but often an underestimated one.Problem-Solution canvas is a tool for entrepreneurs, marketers and corporate innovators, which helps them identify solutions with higher chances for solution adoption, reduce time spent on solution testing and get a better overview of current situation.

Define CS, fit into CC	**1. CUSTOMER SEGMENT(S)** • Working Individuals • Students • Budget conscious consumers	**6. CUSTOMER CONSTRAINTS** • Internet Access • Device (Smartphone) to access the application • Data Privacy • Cost of existing applications • Trust	**5. AVAILABLE SOLUTIONS** • Expense Diary or Excel sheet PROS : Have to make a note daily which helps to be constantly aware CONS : Inconvenient, takes a lot of time
Focus on J&P, tap into BE, understand RC	**2. JOBS-TO-BE-DONE / PROBLEMS** • To keep track of money lent or borrowed • To keep track of daily transactions • Alert when a threshold limit is reached	**9. PROBLEM ROOT CAUSE** • Reckless spendings • Indecisive about the finances • Procrastination • Difficult to maintain a note of daily spendings (Traditional methods like diary)	**7. BEHAVIOUR** • Make a note of the expenses on a regular basis. • Completely reduce spendings or spend all of the savings • Make use of online tools to interpret monthly expense patterns
Identify strong TR & EM	**3. TRIGGERS** • Excessive spending • No money in case of emergency **4. EMOTIONS** BEFORE • Anxious • Confused • Fear AFTER • Confident • Composed • Calm	**10. YOUR SOLUTION** Creating an application to manage the expenses of an individual in an efficient and manageable manner, as compared to traditional methods	**8. CHANNELS OF BEHAVIOUR** ONLINE Maintain excel sheets and use visualizing tools OFFLINE Maintain an expense diary

REQUIREMENT ANALYSIS

4.1 FUNCTIONAL REQUIREMENT

Functional requirements may involve calculations, technical details, data manipulation and processing, and other specific functionality that define what a system is supposed to accomplish. Behavioral requirements describe all the cases where the system uses the functional requirements, these are captured in use cases. Functional requirements drive the application architecture of a system, while non- functional requirements drive the technical architecture of a system.

FUNCTIONAL REQUIREMENT ANALYSIS:

S.No	Functional Requirement	Description
FR-1	User Registration	Registration through Form.
FR-2	Confirmation	Confirmation via OTP.
FR-3	User Login	Login through valid username and password.
FR-4	Forgot password	User can reset the password through mail.
FR-5	User Calender	Allows user to add the data to their expenses.
FR-6	Expense Tracker	Graphically represent the expense in the form of report.
FR-7	Category	Allows user to add categories.
FR-8	Email alert	If amount exceeds, alert through mail.

4.1 NON-FUNTIONAL REQUIREMENT:

Non-functional requirements are often mistakenly called the "quality attributes" of a system, however there is a distinction between the two. Non-functional requirements are the criteria for evaluating how a software system should perform and a software system must have certain quality attributes in order to meet non-functional requirements.

NON-FUNCTIONAL REQUIREMENT ANALYSIS:

S.No	Non-functional requirement	Description
NFR-1	Usability	Helps to keep an accurate record of the amount.
NFR-2	Security	Secured by the password and prevent the app from the cybercrimes.
NFR-3	Reliability	No risk of data loss because each data record is kept in a well built database schema.
NFR-4	Performance	Categories and options are the types of expense. Because of light weight database support, the system's throughput increases.
NFR-5	Availability	The app is accesible all the time.
NFR-6	Scalability	The ability to appropriately handle increasing demands.

PROJECT DESIGN

5.1 DATA FLOW DIAGRAMS

      A data-flow diagram is a way of representing a flow of data through a process or a system. The DFD also provides information about the outputs and inputs of each entity and the process itself. A data-flow diagram has no control flow — there are no decision rules and no loops.

DATAFLOW OF PERSONAL EXPENSE TRACKER APPLICATION:
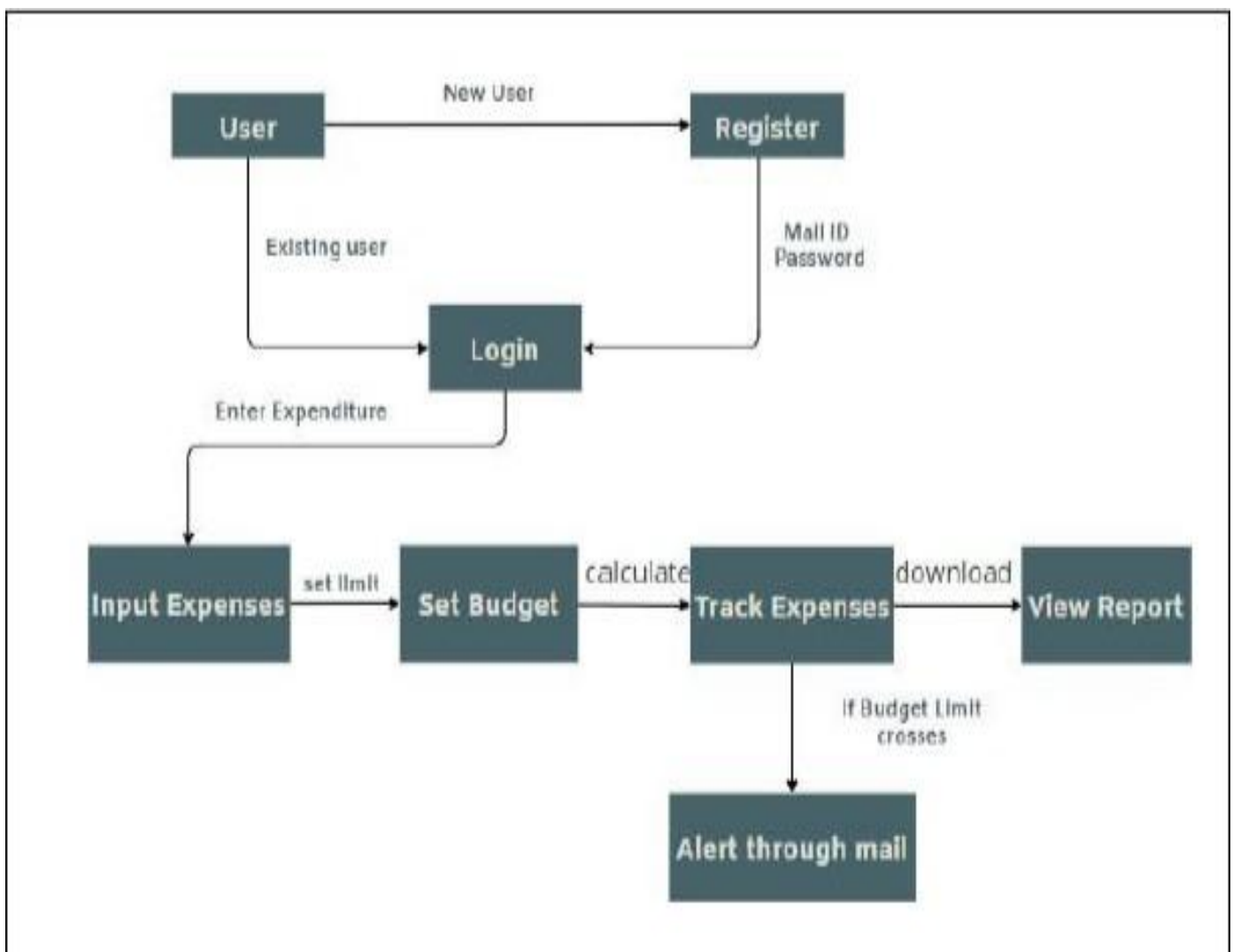
5.2 SOLUTION & TECHNICAL ARCHITECTURE:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

- Find the best tech solution to solve existing business problems.
- Describe the structure, characteristics, behavior, and other aspects of the software to project stakeholders.
- Define features, development phases, and solution requirements.
- Provide specifications according to which the solution is defined, managed, and delivered.
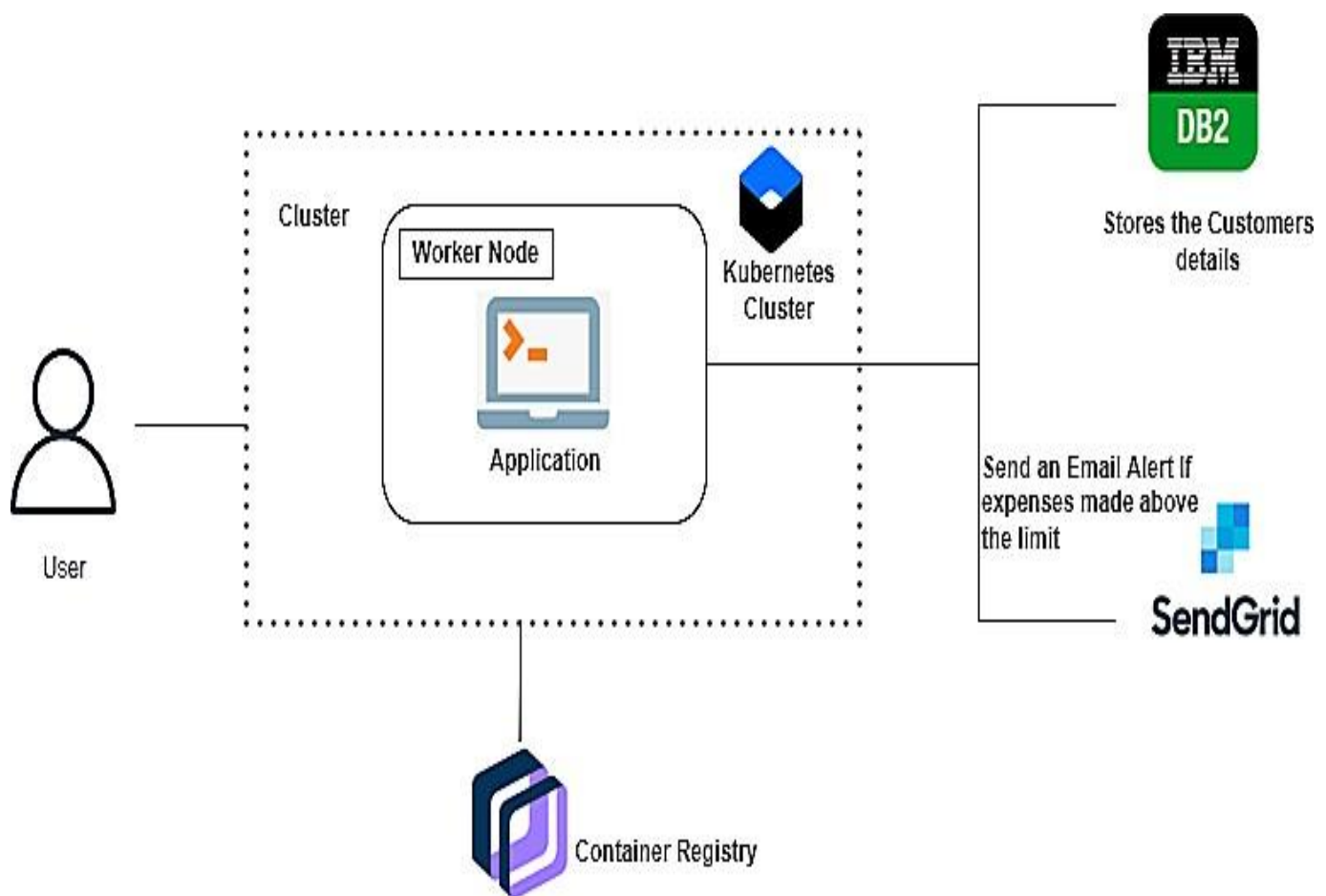
5.2 USER STORIES:

A user story is an informal, general explanation of a software feature written from the perspective of the end user or customer. The purpose of a user story is to articulate how a piece of work will deliver a particular value back to the customer.

In software development and product management, a user story is an informal, natural language description of features of a software system.

Use the below template to list all the user stories for the product.

| User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard.	High	Sprint-1
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm.	High	Sprint-1
		USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login.	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail	I can register for the app through Gmail login.	Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password	I can register & access the dashboard with Gmail Login.	High	Sprint-1
	Dashboard	USN-6	As a user, I can add my day-to-day expenses regularly.	I can track my expenses perfectly.	High	Sprint-2
Customer (Web user)	Dashboard	USN-7	As a user, I can see login page and registration page for which the user logins and input expenses.	I can login through Gmail and register for expense tracking.	Medium	Sprint-2
Customer Care Executive	Dashboard	USN-8	As a customer care executive, I can solve the queries of users.	I can reply to their queries and solve their problems.	High	Sprint-3
Administrator	Registration	USN-9	As an Administrator, I can view the basic details of user.	I can provide the login details.	Medium	Sprint-4
	Dashboard	USN-10	As an administrator, I can able to view the overall progress of a user.	I can give rewards based on their progress.	Low	Sprint-4

PROJECT PLANNING & SCHEDULING

6.1 SPRINT PLANNING AND ESTIMATION:

In Scrum Projects, Estimation is done by the entire team during Sprint Planning Meeting. The objective of the Estimation would be to consider the User Stories for the Sprint by Priority and by the Ability of the team to deliver during the Time Box of the Sprint.

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	2	High	Shankavi M Gokulkumar M Rithika V
Sprint-1		USN-2	As a user, I will receive confirmation email once Ihave registered for the application	1	High	Shankavi M Gokulkumar M Rithika V Kaviyarasan P
Sprint-1	Login	USN-3	As a user, I can register for the application throughGmail	1	High	Shankavi M Gokulkumar M Rithika V
Sprint-1	Dashboard	USN-4	As a user, I can log into the application by entering email & password	2	High	Shankavi M Gokulkumar M Rithika V
Sprint-2	Workspace	USN-1	Workspace for personal expense tracking	2	High	Kaviyarasan P Shankavi M Gokulkumar M Rithika V
Sprint-2	Charts	USN-2	Creating various graphs and statistics ofcustomer's data	1	Medium	Shankavi M Gokulkumar M Rithika V
Sprint-2	Connecting to IBMDB2	USN-3	Linking database with dashboard	2	High	Shankavi M Gokulkumar M Rithika V
Sprint-2		USN-4	Making dashboard interactive with JS	2	High	Shankavi M Gokulkumar M Rithika V R

Sprint			US	Description			Assignees
Sprint-3		US N-1		Wrapping up the server side works of frontend	1	Medium	Shankavi M Gokulkumar M Rithika V
Sprint-3	Watson Assistant	US N-2		Creating Chatbot for expense tracking and for calrifying user's query	1	Medium	Shankavi M Gokulkumar M Rithika V Kaviyarasan P
Sprint-3	SendGrid	US N-3		Using SendGrid to send mail to the user about	1	Low	Shankavi M Gokulkumar M Rithika V
Sprint-3		US N-4		Integrating both frontend and backend	2	High	Shankavi M Gokulkumar M Rithika V
Sprint-4	Docker	US N-1		Creating image of website using docker	2	High	Shankavi M Gokulkumar M Rithika V
Sprint-4	Cloud Registry	US N-2		Uploading docker image to IBM Cloud registry	2	High	Shankavi M Gokulkumar M Rithika V

6.2 SPRINT DELIVERY SCHEDULE
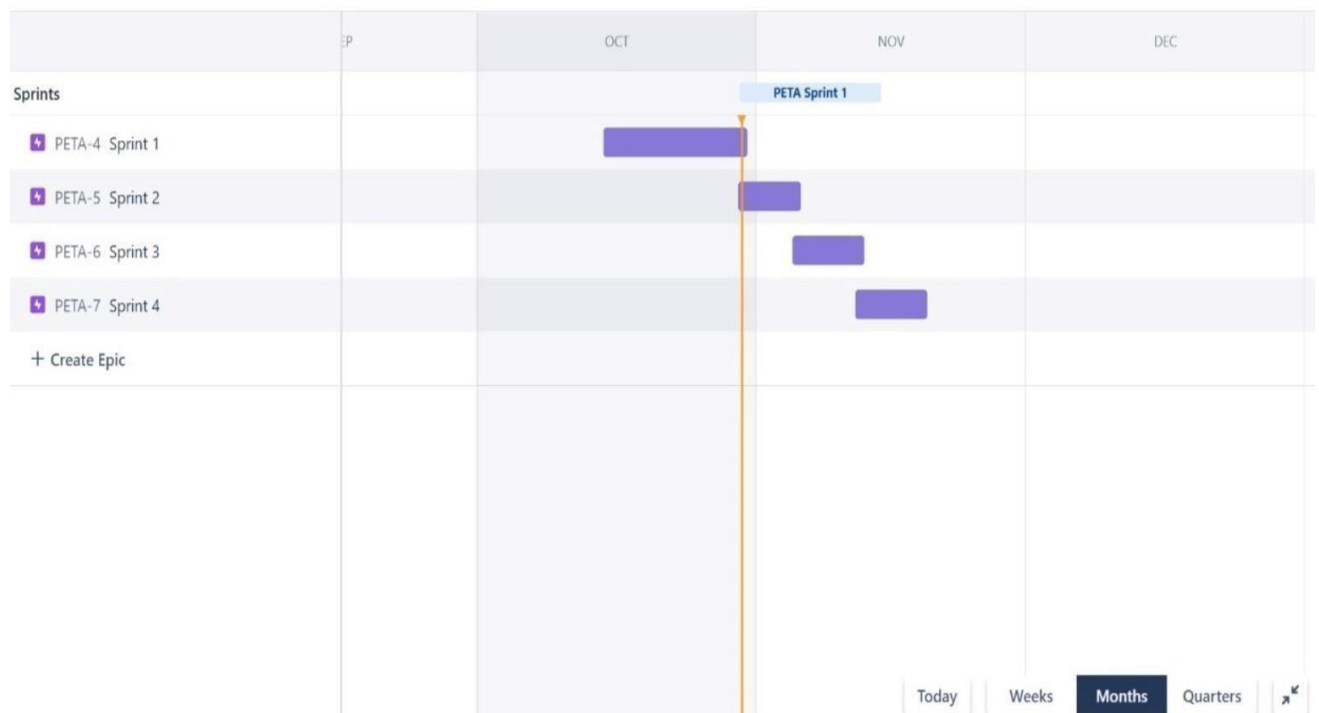
6.3 REPORTS FROM JIRA
The reports in jira has been denoted below:

BACKLOG:

Backlog is usually a list of issues describing what your team is going to do on a project. It's a convenient place for creating, storing, and managing several kinds of issues: issues that you're currently working on (you can also see them on the board and in the current sprint if you're using a Scrum project).

BOARD:

A board displays your team's work as cards you can move between columns. In Jira Software, cards and the tasks they represent are called "issues". Usually, your board reflects your team's process, tracking the status of work as it makes its way through your team's process.

COMMULATIVE FLOW DIAGRAM:

A Cumulative Flow Diagram (CFD) is an area chart that shows the various statuses of work items for an application, version, or sprint. The horizontal x-axis in a CFD indicates time, and the vertical y-axis indicates cards (issues).
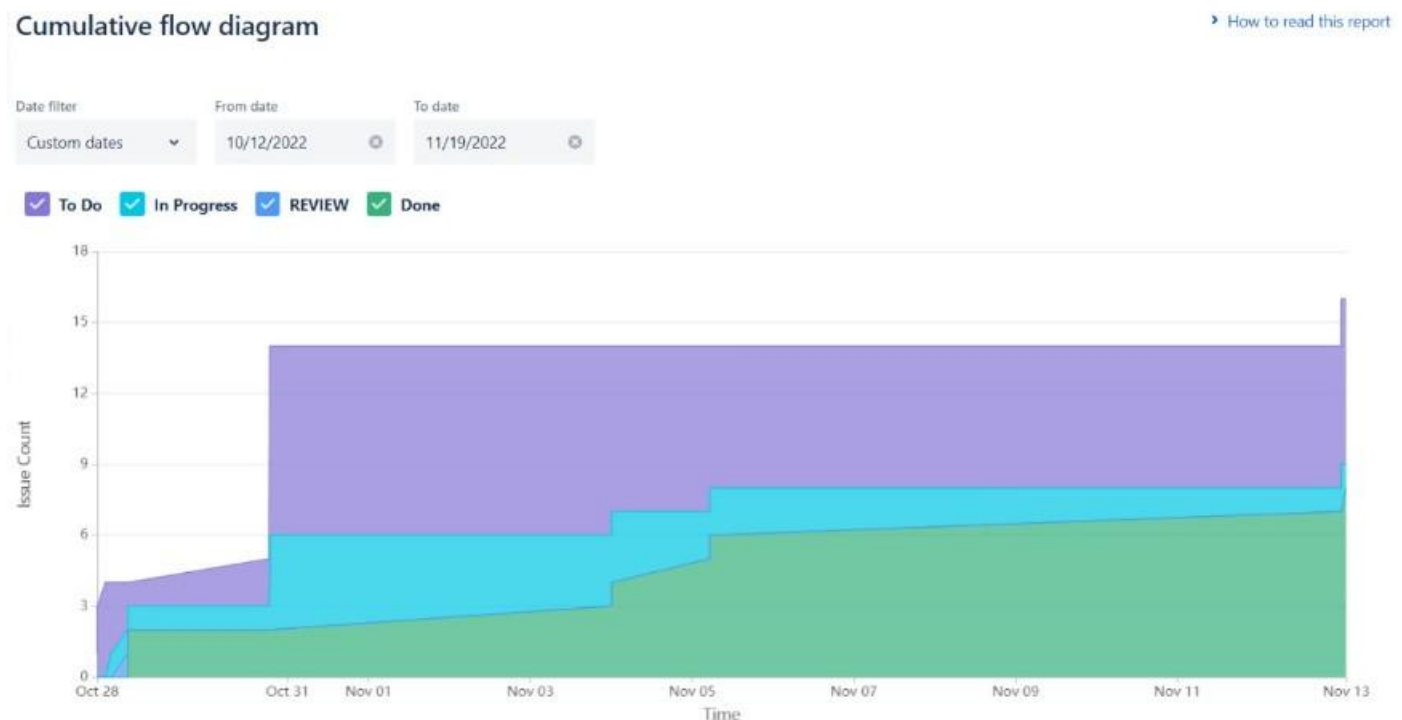
ROAD MAP:

Roadmaps in Jira Software are team-level roadmaps useful for planning large pieces of work several months in advance at the Epic level within a single project. Simple planning and dependency management features help your teams visualize and manage work better together.
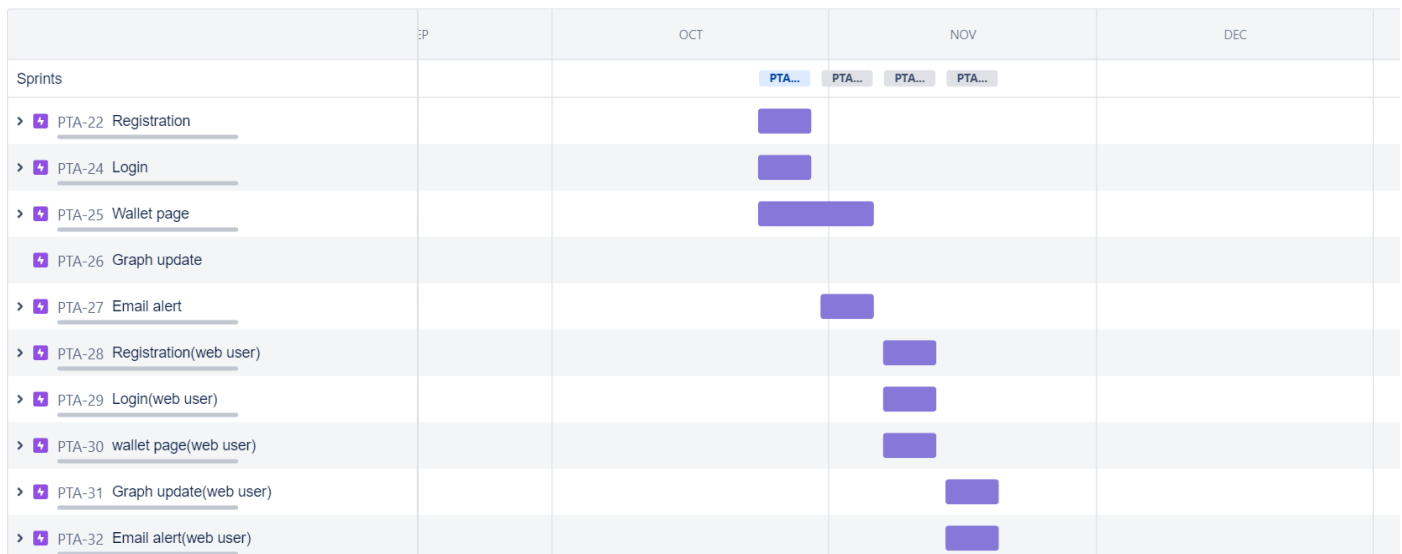
CODING AND SOLUTIONING

7.1 FEATURE 1

1. Expense and Revenue Tracking

2. Managing transaction receipts and records.

3. Paying taxes in time.

4. Processing payment and invoices.

5. Create in-depth reports

7.2 FEATURE 2

Email notifications will be sent to the users once they cross the expenditure limit through send grid mail system. Most notifications are transactional, meaning a recipient's action or account activity triggers them. But some notifications are marketing related, encouraging the recipient to take a specific action. Ecommerce product notifications inform recipients about new products or discounts. Plus, unlike general marketing emails, these are highly personalized and focus on a single product. For example, if a customer views an item on your website and that item goes on sale, you can send the customer a notification to let them know this is the best time to buy. Users can also opt into receiving notifications when an out-of-stock item is back in stock. Notification emails tend to perform well because the content is highly relevant to the recipient. But the only way for the recipient to know this is if you state the content clearly in the subject line. For example, the subject line "New Sign-in to Your Account" gets straight to the point, letting the user know why you sent this notification.

7.3 DATABASE SCHEMA :

Screen 1 — Schemas and Tables

Name	Type	Tables ▲
☑ WWB84730	User	3

Total: 1, selected: 1

Name ▾	Schema	Properties
☐ EXPENSES	WWB84730	...
☐ LIMITS	WWB84730	...
☐ REGISTER	WWB84730	...

Total: 3, selected: 0

Screen 2 — Tables and Table definition (EXPENSES)

Name ▾	Schema	Properties
☐ EXPENSES	WWB84730	...
☐ LIMITS	WWB84730	...
☐ REGISTER	WWB84730	...

Total: 3, selected: 0

Table definition — EXPENSES — No statistics available.

Name	Data type	Nullable	Length	Scale	
USERID	CHAR	Y	100	0	👁
DATE	CHAR	Y	100	0	👁
EXPENSENAME	CHAR	Y	100	0	👁
AMOUNT	INTEGER	Y		0	👁
PAYMODE	CHAR	Y	50	0	👁

View data

Screen 3 — Tables and Table definition (REGISTER)

Name ▾	Schema	Properties
☑ EXPENSES	WWB84730	...
☐ LIMITS	WWB84730	...
☐ REGISTER	WWB84730	...

Total: 3, selected: 1

Table definition — REGISTER — No statistics available.

Name	Data type	Nullable	Length	Scale	
USERNAME	CHAR	Y	100	0	👁
EMAIL	CHAR	Y	100	0	👁
PASSWORD	CHAR	Y	20	0	👁

View data

TESTING

8.1 TEST CASES

- To check weather the user is registered or not.
- To check the login whether its login only if the data is correct.
- To check the username is already exist or not.
- To check whether an register user cannot register themself as an new user.
- To check the user can add their expense in the add session.
- All users can see their expense history and the data is correct or not.
- Verify that user can see their expense report with pie chart.
- Verify all catogories are working normal.
- Check that the validations are working normal In input session.

TEST CASE DATA:

Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Commnets	TC for Automation(Y/N)	BUG ID	Executed By
Testcase_001	Functional	Login Page	To check weather the user is registered or not	Checks whether the logged in username is registered in backend.	1.Enter your username 2.Enter your password 3.click signin button	username: test passwoed:test@123	Homepage should display	Working as expected	Pass		N		saravanan s
Testcase_002	Functional	Login Page	To check the login whether its login only if the data is correct	Checks whether the logged in username is not registered in backend.	1.Enter your username 2.Enter your password 3.click signin button	username: test passwoed:test@123	Homepage will not display	Working as expected	pass		N		Philomina s
testcase_003	Functional	register page	To check the username is already exist or not.	The details given by the user is stored in backend	1.Enter your username 2.Enter your email 3.Enter your password 4.Enter your confirm password 5.Click on signup button	User Input	if it already present it popup message	working as expected	pass		N		Saravanan S
testcase_004	Functional	Register page	to check whether an register user cannot register themself as an new user.	checks the user name is present in the database.	1.Enter your username 2.Enter your email 3.Enter your password 4.Enter your confirm password 5.Click on signup button	username: test passwoed:test@123	User will not be able to access to login page	working as expected	pass		N		Tharani devi R
Testcase_005	Functional	Add page	To check the user can add their expense in the add session	whether it's add or not.	1.Enter your username 2.Enter your password 3.click signin button 4.add button	username: test passwoed:test@123	successfully add and go to history page.	Working as expected	Pass		N		surya priya s
Testcase_006	Functional	history Page	All users can see their expense history and the data is correct or not.	Retrive data from database that suitable for particular user or not.	1.Enter your username 2.Enter your password 3.click signin button 4.add button	username: test passwoed:test@123	To display all the expense in history tab.	Working as expected	Pass		N		saravanan s
Testcase_007	Functional	limit Page	Verify that user can update their limit for monthly expense.	Update databse with recently added limit	1.Enter your username 2.Enter your password 3.click signin button 4.Go to limit page	username: test passwoed:test@123	user can update there limit.	working as expected	Pass		N		tharani devi r
Testcase_008	Functional	Report page	verify that user can see their expense report with pie chart	updated database for retrive data from expense	1.Enter your username 2.Enter your password 3.click signin button 4.Go to limit page 5. click report and today	username: test passwoed:test@123	report can be seen	Working as expected	Pass		N		saravanan s
Testcase_009	UI	report page	verify all catogories are working normal	check the results are in correct state	1.Enter your username 2.Enter your password 3.click signin button 4.Go to limit page 5. click report and today	username: test passwoed:test@123	give accurate image	Working as expected	Pass		N		suryapriya s
Testcase_0010	Functional	Home page	Check that the validations are working normal In input session	check that working normaly	1.Enter your username 2.Enter your password 3.click signin button	username: test passwoed:test@123	smooth running of pages	Working as expected	Pass		N		philomina s

8.1 USER ACCEPTANCE TESTING:

PURPOSE OF DOCUMENT:
The purpose of this document is to briefly explain the test coverage and open issues of the Personal Expense Tracker Application project at the time of the release to User Acceptance Testing (UAT).

DEFECT ANALYSIS:
This report shows the number of resolved or closed bugs at each severity level, and how they were resolved.

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	9	4	4	2	20
Duplicate	0	0	0	0	0
External	5	2	0	4	11
Fixed	2	0	1	0	3
Not Reproduced	0	0	4	0	4
Skipped	0	0	0	0	0
Won't Fix	0	0	1	0	1
Totals	16	8	10	6	39

TEST CASE ANALYSIS:
This report shows the number of test cases that have passed, failed, and untested.

Section	Total Cases	Not Tested	Fail	Pass
Print Engine	10	0	0	10
Client Application	45	0	0	45
Security	2	0	0	2
Outsource Shipping	4	0	0	4
Exception Reporting	5	0	0	5
Final Report Output	7	0	0	7
Version Control	3	0	0	3

RESULTS

9.1 PERFORMANCE METRICS:

Tracking income and expenses.

Transaction receipts.

Organizing Taxes.

Payments and Invoices.

Reports.

E-Commerce integration.

Vendors and Contractors.

Access control.

Track Projects.

Inventory tracking.

In-depth insights and analytics.

Recurrent Expenses.

ADVANTAGES & DISADVANTAGES

ADVANTAGES:

- Improved customer service.

- Cloud based solution.

- Order fufilment.

- Harness Customer Loyalty and Retention.

- Scale-up at the pace your business is growing.

- Control the security of your business and customer data.

- Deliver an outstanding customer experience through addition control over the app.

- Seamlessly integrate with existing infrastructure.

- Ability to provide valuable insights.

- Boost the productivity of all the processes within the organization.

- Optimize sales processes to generate more revenue through enhanced data collection.

DISADVANTAGES:

- Internet is need for access the data.
- It reduce the momory power in human.
- It create laziness to maintain in notebook or in memory.
- It takes time to put all the details and see our daily expenses.
- System clash.
- Reduced physical Audits.
- No solution to improve or eliminate bottlenecks in the service.

CONCLUSION

Tracking your expenses daily can save your amount, but it can also help you set financial goals for the future. If you know exactly where your amount is going every month, you can easily see where some cutbacks and compromises can be made.The project what we have developed is work more efficient than the other income and expense tracker. The project successfully avoids the manual calculation for avoiding calculating the income and expense per month. The modules are developed with efficient and also in an attractive manner. The developed systems dispense the problem and meet the needs of by providing reliable and comprehensive information. All the requirements projected by the user have been met by the system. Since the screen provides online help messages and is very userfriendly, any user will get familiarized with its usage. Module s are designed to be highly flexible so that any failure requirements can be easily added to the modules without facing many problems. The best organizations have a way of tracking and handling these reimbursements.

FUTURE SCOPE

Provision to add different currencies will be added so that this application is not just limited to USAbut also can be used worldwide and the currency converters will be designed and added in order to convert the different currency rates.

In order to make it more user friendly and less user intensive, when the user tries to add the same category or vendor to an expense/income record, a duplicate alert will be presented showing the same category/vendor which the user entered previously for some expense/income and then he can tap on it and the entries will be automatically filled for the current record.

A new tab named "Search" will be implemented so that if the user searches for any vendor, category or subcategory by name, he can see the expenses made on that particular search in a table view list with the total number of transactions made and the total expense amount for that search.

the graph reports show the expenses and income graphs separately in the current version. In the future, a comparison between the income made and expense will be shown graphically providing the user more options to see what they are making and what they are spending accordingly.

APPENDIX
GITHUB AND PROJECT DEMO LINK

GITHUB LINK

https://github.com/IBM-EPBL/IBM-Project-32105-1660208083

DEMO LINK

https://drive.google.com/file/d/1y97DfUp4hzy9mLfiIyJ86utxjwFROHaC/view?usp=drivesdk